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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,324	04/06/2001	Moeness Gamal Amin	SAR 14209	5671

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EXAMINER

WARE, CICELY Q

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/828,324	AMIN ET AL.	
	Examiner	Art Unit	
	Cicely Ware	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 2,3,7,8,11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show:
 - a. Fig. 2, element 204 examiner suggests applicant label element as referenced in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Werner et al. (US Patent 6,493,381).

With regard to claim 1, Werner et al. discloses a method of equalizing a radio frequency (RF) signal comprising: generating a cost function using amplitude and phase components of the output signal of an equalizer; minimizing said cost function using a gradient recursion algorithm; and adjusting the tap weights of said equalizer using the result of said gradient recursion algorithm (abstract, col. 2, lines 48-50, 54-56, col. 3, lines 19-24, col. 4, lines 6-12, 50-60).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-6, 9 and 10 rejected under 35 U.S.C. 103(a) as being obvious over Malkemes et al. (US Patent Application 20020206040 A1) in view of Werner et al. (US Patent 6,493,381)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned

by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

(1) With regard to claim 4, Malkemes et al. discloses in (Fig. 1 and Fig. 2) an apparatus for receiving a radio frequency (RF) signal comprising: at least one antenna for receiving the RF signal (Fig. 1 (102₁, 102₂, 102_L)); at least one tuner for selecting the RF signal from a desired frequency band (Fig. 1 (104, 106)); an equalizer having a plurality of tap weights (Fig. 2 (202₁, 202₂, 202_L)).

However Malkemes et al. does not disclose a modified constant modulus algorithm (M-CMA) circuit for adjusting said plurality of tap weights.

However Werner et al. discloses a modified constant modulus algorithm (M-CMA) circuit for adjusting said plurality of tap weights (col. 4, line 40-41, 50-67).

Therefore it would have been obvious to one of ordinary skill in the art to modify Malkemes et al. to incorporate his tap control as a modified constant modulus algorithm (M-CMA) circuit for adjusting said plurality of tap weights to minimize the cost function that is better suited to provide initial convergence of equalizer (Werner et al., col. 4, lines 51-52).

(2) With regard to claim 5, claim 5 inherits all the limitations of claim 4. Malkemes et al. further discloses in (Fig. 2 and Fig. 3) wherein said equalizer comprises: a plurality of feed forward equalizers (FFE) (Fig. 3 (302₁, 302₂, 302_L)), where each FFE is coupled to an antenna; a combiner (304) for combining the output signals from each of said plurality of feed forward equalizers to form a combined signal; a carrier/slicer circuit (Fig. 2 (206)) for extracting the carrier from the combined signal and generating a symbol

error signal; and a decision feedback equalizer (Fig. 3 (306), Fig. 2 (208)) for suppressing inter-symbol interference in said combined signal; wherein said M-CMA circuit adjusts the tap weights of said plurality of feed forward equalizers and said decision feedback equalizer (Fig. 2 (310), Fig. 2 (210)).

Malkemes et al. does not explicitly disclose a M-CMA circuit adjusting the tap weights. However Malkemes et al. discloses wherein the combiner performs blind equalization that does not require a training sequence for adjusting the taps. It is well known in the art that when no training sequence is available, the equalizer has to be converged blindly, in which blind equalization algorithms inherently uses a tap adaptation algorithm that minimizes a cost function (CMA).

- (3) With regard to claim 6, claim 6 inherits all the limitations of claim 4 and 1.
- (4) With regard to claim 9, claim 9 inherits all the limitations of claim 5.
- (5) With regard to claim 10, claim 10 inherits all the limitations of claim 9 and 1.

Allowable Subject Matter

7. Claims 2, 3, 7, 8, 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made record of and not relied upon is considered pertinent to applicant's disclosure:

- a. Vembu et al. (IEEE, Convex Cost Functions in Blind Equalization)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
August 5, 2004


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600